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A Study of Library Visits and Inhouse Use of Library Documents by Indian Space Technologists

M S SRIDHAR*

Describes the methodology, sample and limitations of the study and analyses of 1,721 user visits to ISRO Satellite Centre (ISAC) Library, systematically recorded over two months. Presents frequency distribution table of user visits, time series analysis made to see the pattern of inhouse use of the library at different timings of a day, different days of a week and over weeks and months. Identifies cyclical, seasonal and irreversible variations in inhouse use. Presents frequency distribution of library visits against users, lists out the results and observations Concludes by enumerating factors affecting inhouse use.

0 INTRODUCTION

Normally, libraries keep a register at the entrance of the library for users to record their visit to the library. Like in any other library, in ISAC Library also a good number of users ignore this register. Even though such statistics are useful in knowing library visits of different types of users, peak and lean hours of use, intensity of inhouse use, etc, there is no easy and cost-effective way to collect complete data. Keeping this in view, attendance of inhouse use of ISAC Library has been recorded at random intervals and analyzed in this study.

1 METHODOLOGY, SAMPLE AND LIMITATIONS

ISAC Library is housed temporarily in an industrial shed with limited and inadequate reading facilities. There are 20 reading tables and 30 chairs and another 10 chairs with writing pad attachment. Thus, at any time it can accommodate a maximum of 40 users. The total registered members of the library is about 1,000. For the purpose of survey, about

*Librarian, ISRO Satellite Centre, Peenya Industrial Estate, Peenya, Bangalore-560 058.

850 technical staff are covered in the study. Library is kept open from 8.00 hours to 17.30 hours on working days and between 9.30 hours to 1600 hours on holidays except on Sundays and selected public/national holidays.

Attendance of inhouse users (i.e., excluding administrative staff of the Centre and those visiting library exclusively to return document or interact with issue counter) of library has been recorded 3-4 times in a working day at an interval of about 2 hours for a total period of two months. The time of recording was continuously advanced by about 15-20 minutes per day. During holidays names of all users whov isited library were recorded. Some of the important events which occurred during the period of study (i.e., 16 March 1983 to 17 May 1983) were launching of a satellite built by the centre at one of the other centres of ISRO (which necessitated presence of considerable number of scientists and engineers at the launching centre and other operational areas), part of the reviews for departmental promotion and preparatory time for a forthcoming review of a major project.

In analyzing the data, a simple frequency distribution of sample attendance with maximum, minimum, and average attendance is presented. A time series analysis of the data by moving average method has been made to trace the trend and seasonal variations in attendance in different times of a day, different days of a week and for different weeks and months covered in the study. Also, a comparison is made with overall statistics of user visits and inhouse 'use' based on guesstimate records. Membership turnover is also examined to see its contribution in secular irreversible trend in inhouse use of library.

The total number of user visits recorded in the study including 5 holidays is 1,721 and it forms nearly 50% of total user visits of guesstimate records. Hence the sample is quite adequate and representative. Nearly, 11,000 inhouse 'uses' of various documents in the library during this period is recorded in the guesstimate statistics based on sample recording of number of documents left on reading tables of the library.

2 FREQUENCY DISTRIBUTION OF LIBRARY ATTENDANCE

Table 1 depicts the frequency distribution of systematic sample library attendance collected during the period 16 March 1983 to 17 May 1983 along with total number of user visits. By and large, the attendance at a time is mainly conditioned by the available reading facility described

above. A maximum attendance of 36 was found once during 16.00-17.30 hours and an attendance of 31 during 11.00-12.00 hours. The minimum attendance of one was found once during 8.00-9.00 hours and once on a holiday. The average attendance works out to 11.6.

Table 1

Frequency Distribution of Library Attendance

No. of users at a time	*Frequency of occurrence*	*Total no. of 'user visits'*
1	2	2
2	3	6
3	2	6
4	5	20
5	9	45
6	7	42
7	12	84
8	14	112
9	13	117
10	10	100
11	13	143
12	10	120
13	9	117
14	6	84
15	4	60
16	4	64
17	2	34
18	3	54
19	2	38
20		60
21-25		179
26-30	0	167
31 and above	2	67
Total	149	1,721

3 TIME SERIES ANALYSIS OF THE DATA

Average as well as moving average attendance at the library at different block hours of the day are presented in Table 2.

Table 2

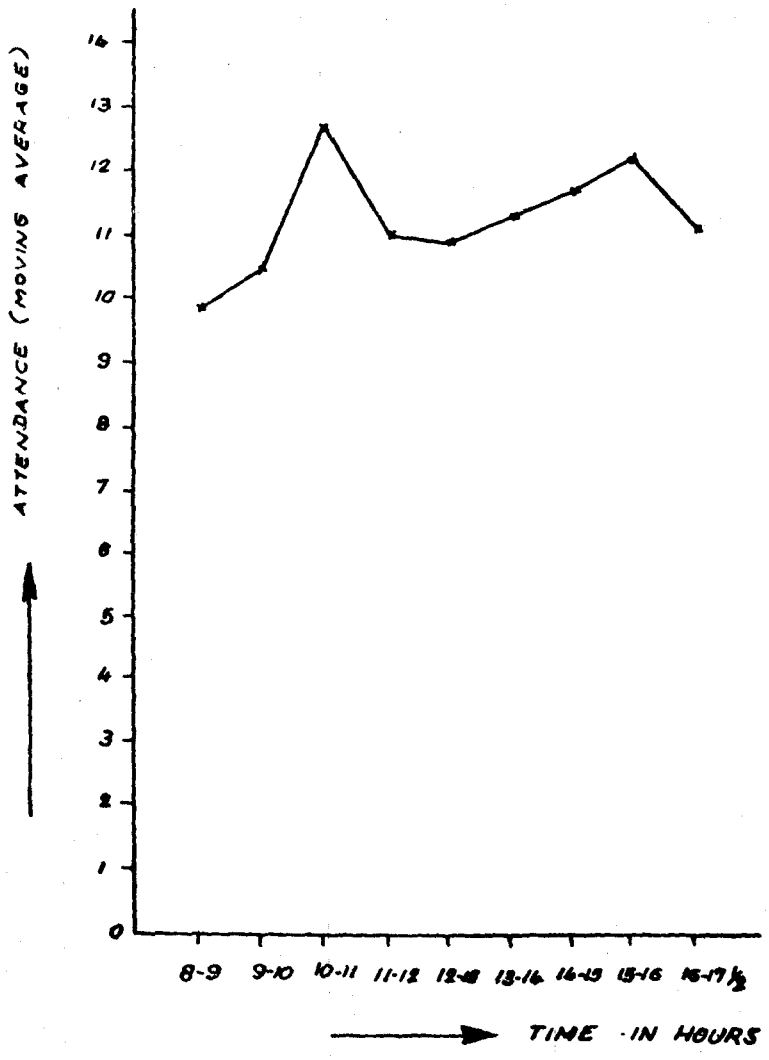
Library Attendance at Different Block Hours

Timing	*Attendance*	
	Average	*Moving Average*
8.00- 9.00 Hrs	6.5	9.8
9.00-10.00 Hrs	13.1	10.4
10.00-11.00 Hrs	11.6	12.7
11.00-12.00 Hrs	13.3	11.0
12.00-13.00 Hrs	8.2	10.9
13.00-14.00 Hrs	11.1	11.3
14.00-15.00 Hrs	14.5	11.7
15.00-16.00 Hrs	9.4	12.2
16.00-17.00 30 Hrs	12.7	11.1

As could be seen from Table 2, the early morning hours, i.e., between 8.00-9.00 hours have the least attendance of 6.5 and a maximum of 14.5 occurs between 14.00-15.00 hours. It may be noted here that the issue counter is closed between 8.00 and 9.30 hours and on holidays. The next to maximum, i.e., 13.3 occurs between 11.00-12.00 hours. Interestingly, the expectation of higher attendance during the lunch break (12.00-13.30 hours) and tea breaks (10.30-11.00 hrs and 15.00-15.30 hours) is not supported by the data. However, as per moving average the maximum attendance occurs between 10.00-11.00 hours and 15.00-16.00 hours.

Since the sample attendance is taken at different timings with fixed interval, it fairly represents a continuous data when presented as moving average. The moving average of attendance clearly shows a trend where the attendance gradually increases from early morning till 11.00 hours,

falls down at the mid of the day, again increases to reach the maximum at 14.00 hours and falls again at the end of the day. Thus, there are two peak hours for the library. Graph I indicates that the moving average of attendance when plotted on graph results in a bimodal, roughly symmetric distribution with two peaks wherein mean and medium have almost same value (i.e., 11.2 and 10.9, respectively).



Graph-1. Moving average of attendance at different times.

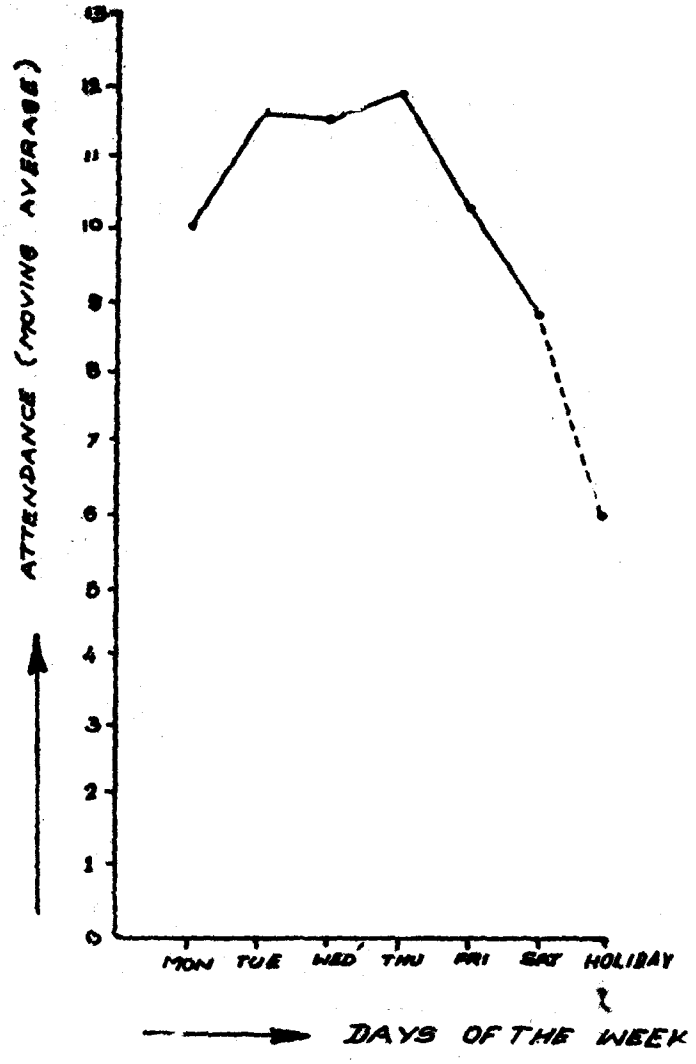
The average and moving average of attendance on different days of a week are presented in Table 3. It is but natural that holidays get least attendance. The data shows a clear trend of gradual increase in attendance starting from Monday till it reaches maximum in the middle of the week (i.e., Thursday) and again declines slowly at the end of the week. Graph-2 plots the same data to show a rainbow-shaped cyclic variation of library attendance during a week. The diagram represents a rough lepto kurtosis distribution with fairly sharp peak and also a slightly positively skewed distribution.

Table 3

Average and Moving Average of Attendance on Different Days of the Week and on Holidays

Days of the week/ Holidays	*Attendance*	
	Average	*Moving Average*
Monday	11.0	10.0
Tuesday	10.7	11.6
Wednesday	13.0	11.5
Thursday	10.7	12.0
Friday	12.2	10.4
Saturday	8.4	9.0
Holidays	6.2	—

Tables 4 and 5 respectively present the attendance data over weeks and months excluding holiday attendances. Data is inadequate to indicate any cyclic variation. However, it helps to see seasonal variation, if any.



Graph-2. Moving average of attendance on different days.

Table 4

Average and Moving Average Attendance for Different Weeks

Week No.	*Attendance*	
	Average	*Moving Average*
1	14.5	16.3
2	18.1	15.7
3	14.5	14.0
4	9.5	10.9
5	8.7	9.5
6	10.1	9.4
7	9.1	9.5
8	9.4	10.2
9	11.2	10.2
10	10.1	10.7

As could be seen from Table 5, maximum attendance at the beginning of the survey comes down from the end of March to the middle of April and shoots up again during beginning of May.

Table 5

Average Attendance at a Time for Different Months

Month	*Average Attendance*
March	15.4
April	8.7
May	9.5

There are possible reasons attributable to this change. The data substantiates the general belief that during the period of departmental reviews for promotion (i.e., second halfs of March, May, September and December) there will be higher visits to library and greater inhouse use of library documents than during any other period. This is obvious from the fact

that March has an average attendance of 15.4 whereas April and May have 8.7 and 9.5, respectively. It may also be noted here that more persons appear for departmental review during March and September than in the months of May and December. Secondly, considerable number of users were out of station and also otherwise busy during April for launching of a satellite.

Another important aspect to be taken note of while analyzing the data is library membership turnover. During the period of one year (i.e., July 82-June 83), the total membership has increased from 936 to 1,082 with an average monthly addition of 16 and deletion of 4. This accounts for a clear 15.6% annual (or 1.3% monthly) increase in membership. In addition, every month four old members are replaced by four new members who make relatively more visits to library and more inhouse use of library documents for acquaintance with the organization and the heterogeneous space technology which is normally not taught as a specialization in the academic institutions. Thus, these factors should have actually made the attendance of successive weeks and months more and hence the variation noticed in April and May compared to March should have been slightly more than what we see now.

4 FREQUENCY DISTRIBUTION OF USER VISITS

Table 6 depicts how the same data of 1,719 users visits are distributed among 429 (technical) users of the Library.

The average visit per user is about 4 and the number of visits per user during the survey ranges from 1 to 34. As could be seen from Table 6, nearly one-third of the users have made only one visit. On the other hand, 10 intensive users have made, on an average, 20 visits to the library during the sample survey. Further, 368 users (i.e., 85.79% of those visited) have made a total of 1,012 visits (i e., 58.87% of total visits) and the remaining 61 users (i.e., 14.22%) have made the balance 707 visits (i.e., 41.12%).

A list of 34 users who visited 10 or more times was examined to ascertain any correlation with inhouse use and user characteristics. The list does not reveal any clear correlation of inhouse use of the library with rank/status of user and user divisions. Thus, the popular belief that the nearness of a division or section to the library plays a positive role in increasing the inhouse use of library is not supported by the data. However, slight correlation, if any, is expected when the entire population of 429 users is analyzed in a separate study.

Table 6

Frequency Distribution of User Visits

No. of visits	*No. of users*	*Total 'user visits'*
1	142	142
2	71	142
3	50	150
4	26	104
5	25	125
6	29	174
7	25	175
8	11	88
9	14	126
10	7	70
11	7	77
12	10	120
13	2	26
14	1	14
15	1	15
16	1	16
17	2	34
18	1	18
19	0	00
20	1	20
24	1	24
25	1	25
34	1	34
Total	429	1,719

The data in Table 6 is reformulated into five groups in Table 7 incorporating the remaining 'nonusers'. Table 7 clearly shows that a small segment of regular users make inhouse use of library much more than a large number of total users/members. Since the available reading facility in the library and inhouse use are interdependent, it is essential to investigate the reasons for less use or nonuse by some members and promote inhouse use among infrequent users and nonuser.

Table 7

Intensity of inhouse Use

User type	*Frequency range*	*Average No. of visits*	*No. of users*	*% of users*	*Total user visits*	
					No.	*%*
Non-Users	0	0	421	49.53	0	0
Infrequent Users	1—3	1.65	263	30.94	434	25.25
Occasional users	4—7	5.50	105	12.35	578	33.62
Frequent users	8—13	9.94	51	6.06	507	29.49
Intensive users	14—34	20.00	10	1.18	200	11.63
Total	0—34	202	850	100.00	1,719	99.99

5 RESULTS AND OBSERVATIONS

The study reveals that the average attendance at any time is 15.6 and it varies from 1 to 36. The distribution of inhouse use of library during a typical day has a bimodal, roughly symmetric distribution with two peaks where the mean and median have almost the same value. The distribution of inhouse use over a typical week is cyclic with maximum in the middle of the week and minimum at the beginning and end of the week. The data substantiates the belief that during the season of departmental

reviews for promotion, there will be conciderable increase in inhouse use of library. Secondly, major events/activities of the Centre have caused swift variations in the inhouse use of library. The analysis of membership turnover indicates an irreversible trend of nearly 16% increase in membership per year apart from replacement of about 50 existing members by new members in a year.

The average 'user visit' per user during the survey is about 4 and user visits have ranged from 1 to 34 during the survey. Nearly one third of the users have made only one visit and 10 intensive users have made, on an average, 20 visits during the survey. The study clearly shows that a very small band of users make inhouse use of library much more than all others put together.

Following are the further observations made while conducing the survey. It is estimated that on an average five documents are used per visit per user. By and large, inhouse use of library is more by new entrants than experienced ones, and by male users than female users. Inhouse use of library on holidays is more by high-placed scientists and engineers than others. Again, high-placed scientists and engineers use library more during 16.00-17.30 hours of the day than at other times. More nontechnical staff of the centre visits library during lunch break. The technical staff from service facilities/sectors have, by and large, made least inhouse use of library. Lastly, users from such of the sections/divisions/projects which are near the library have made more use (inhouse) of library than others. However, as noted earlier, this is not true in case of intensive users of the library, indicating thereby that strong motivation to seek information is likely to overcome a barrier like distance between the user and the library.

6 CONCLUSION

The reading facility at ISAC Library is too inadequate by any standard and this has greatly hampered the inhouse use of library. Secondly, the very nature of work of users does not allow them to have regular library hours. In other words, the nature of work of space technologists differs from that of academicians, pure scientists and even R & D workers. Thirdly, free and fairly adequate reprographic service has enabled many users to carry copies of documents of their interest to their work situations rather than consulting them in the library. Keeping in view all the limitations set out, it may be safely concluded that the inhouse use of ISAC Library is quite considerable. A better picture can be had if the

data is compared with the data of similar libraries. A separate study is also being carried out to correlate inhouse use of library with user characteristics and other variables.

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About the Author

Dr. M. S. Sridhar is a post graduate in mathematics and business management and a doctorate in library and information science. He is in the profession for last 35 years. Since 1978 he is heading the Library and Documentation Division of ISRO Satellite Centre, Bangalore. Earlier he has worked in the libraries of National Aeronautical Laboratory (Bangalore), Indian Institute of Management (Bangalore) and University of Mysore. Dr. Sridhar has published four books ('User research: a review of information-behaviour studies in science and technology', 'Problems of collection development in special libraries', 'Information behaviour of scientists and engineers' and 'Use and user research with twenty case studies') and 74 research papers, written 19 course material for BLIS and MLIS, presented over 22 papers in conferences and seminars, and contributed 5 chapters to books. **E-mail:** sridharmirle@yahoo.com, mirlesridhar@gmail.com, sridhar@isac.gov.in ; **Phone:** 91-80-25084451; **Fax:** 91-80-25084475.